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ABSTRACT

A total of 96 students (16 males and 16 females, chosen randomly from each of the first, fourth, and seventh grades of a grade school and a middle school,) allocated rewards in response to stimuli representing pairs of children differing in work output and effort. Stimulus materials consisted of: (1) a booklet containing nine drawings representing combinations of one of three levels of work output and one of three levels of effort; (2) three drawings representing levels of effort only and three drawings representing levels of work only; (3) spoken sentences conveying information about depictions; and (4) a comparison drawing representing medium levels of effort and work. In effort-only and work-only stimulus conditions, subjects were told that some information had been misplaced or lost but that they were to continue to allocate rewards according to what they thought was fair. A calibrated, mechanical response apparatus was used to display subjects' reward allocation. Results indicated that, as compared with first graders, older children weighted work output less and effort more, but were more affected by equal-sharing norms. Counter to expectations derived from the literature on moral cognition, the allocations of first graders were based almost entirely on deservingness components. Usage showed that deservingness is not a unitary component of the allocation decision; children's decisions were based on several considerations. Respectively, these last two facts strengthen the doctrine of structural parallelism between different manifestations of moral reasoning and refute the thesis of centration. (Author/RH)

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Deservingness and Equality in Children's Reward Allocations: Developmental Trends

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Abstract

First, fourth, and seventh graders allocated rewards within pairs of children differing in work output and effort. A weighted averaging model of information integration, with allowance for equal sharing, was applied. Compared to first graders, older children weighted work output less, and effort more, but were more affected by equal-sharing norms.

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Deservingness and Equality in Children's Reward Allocations: Developmental Trends

The study of morality development has spawned three general research paradigms. One involves choosing among alternative actions in dilemmas with moral implications, and will not be treated here. A second concerns judgment of morality of persons who have engaged in given outcomes, or who are responsible for certain outcomes ("moral judgment"). The third involves the allocation of rewards among participants in some task ("distributive justice") and is the focus of this paper.

Piaget (1965) loosely defined three periods of development in reward allocations. The earliest is marked by subordination to adult conceptions of fairness. The second emphasizes equal treatment of all, and gives way to a relativistic assessment based on deservingness. Thus Piaget suggested a progression from an equality to an equity basis of sharing. Others have agreed in principle with this progression in children (Damon, 1977; Kohlberg, 1971), though Kohlberg suggests that in adults, the most advanced stage is a reprise based on principles of human equality.

Unfortunately, empirical literature is less clear on the equality/equity issue. One may as easily find support for an equality -> equity progression (e.g., Leventhal & Anderson, 1970) as for the opposite progression (e.g., Streater & Chertkoff, 1976). While situational variables are often invoked to explain discrepancies, the fact remains that data rarely conform strictly to either norm, but lie somewhere between expectations. For example, if one participant is said to have produced 70%, and the other, 30% of the work, rarely will allocations be exactly 70/30 or 50/50. Inferences of which norm was used are based on approximation of data to the ideal allocation, and not on some theoretically derived principle. This study utilized a conceptual

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basis permitting determination of the relative use of equality and equity rules in different age groups.

Besides the general (and perhaps simplistic) question of extent of equality/equity usage, one may ask what bases of equity are being used. Eqitable sharing may be based on relative need, or on derservingness. The latter, in turn, may be segmented into participant effort, and work accomplished. As we all sadly learn, effort and accomplishment do not always coincide! It may be that within the latitude given to deservingness, there is also a developmental progression in reliance on participants' effort versus work accomplished. This suggestion follows from developmental theory in the moral judgment paradigm. One of the most cited progressions in the development of children's judgments of morality is from an emphasis on the consequences of others' behavior to the intended effects. Empirically, shifts in reliance on consequence information to reliance on intentions have been regularly noted (Keasey, 1978; Surber, 1977). If we believe in the unity of moral processes across tasks as suggested in the principle of "structural parallelism" (Piaget, 1965), a parallel between the two paradigms presents itself. Work accomplished by task participants easily aligns with the consequences of morally judged actions, while participant effort, being an internal motivational factor can be compared with the intentions of the actor. Thus, we expect that within the deservingness element of reward allocations, the relative usage of work accomplished and effort should shift with age, just as intentions and consequence information usage shifts in moral judgment.

To test the two progressions, i.e., equality -> equity, and within the latter, work accomplished -> effort, we used an information integration conceptual approach (Anderson, 1981). Judgments are formed by integrating information about the judged object(s). Information is represented by two

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parameters: Scale Value, and Weight. Scale value refers to the quantitative position of a piece of information on the judgment dimension, e.g., the "deservingness" of some given effort, or the morality of a particular intention. Weight is the information's importance to the overall judgment relative to other information, e.g., for younger children, effort should be less important than for older children. The scale values of information utilized in a judgment are combined in some algebraic fashion, frequently an averaging rule. Also averaged with information value is an initial impression, which is the value of a judgment prior to reception of information, i.e., given no information. While this value can be empirically determined in many instances (Kaplan, 1975), it is reasonable to assume in a reward allocation task that in the absence of knowledge of participants' contributions, the initial impression is for equal sharing. By specifying the informational components and values, the initial impression, and the general integration rule, it is possible to determine both the contribution of equity and equality considerations, and within the former, the relative weight of effort and work accomplished.

METHOD

Subjects

Thirty-two children (16 males, 16 females) were chosen randomly from each of the first, fourth, and seventh grades of a grade school and a middle school. Mean ages of the three groups were 6.5, 9.7, and 12.6 years, respectively.

Stimuli

Six drawings were constructed, each representing one of three levels of Effort (Low, Medium, and High), and one of three levels of Work Accomplished

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(Low, Medium, and High). Levels of the two factors were combined factorially, yielding nine pairs, and each pair was accompanied by an appropriate verbal description of the order: This child did not try hard and did not do much work (Low-Low); This child tried hard and did some work (Medium-Medium); This child tried very hard and did very much work (High-High), and so on. Subjects were instructed that each description pertained to a different child.

In addition to the nine effort/work combinations, three Effort-only and three Work-only descriptions were included, each paired appropriately with a drawing. The stimulus booklet consisted of the nine pairs and six single drawings, and in each instance, the experimenter presented the sentence verbally. Drawings were of the same sexed person as the subject.

The task was to allocate a reward between two children. In every trial, one of the 15 depicted children was pitted against a second child, who was always described by the medium level of effort and work, allowing a common standard against which all 15 "experimental" children could be compared.

Four separate presentation orders were generated for the 15 trials. The order of effort and work information was counterbalanced so that effort occurred first within eight trials, and work occurred first in the remaining seven. Experimental and standard description order was counterbalanced in the same manner. Within each of the nine trials pairing both effort and work in the experimental description, the order of that information was the same for both the experimental and standard descriptions.

To alleviate potential boredom, choice tasks were interspersed after the fourth, eighth, and twelfth trials. Subjects indicated their preference between two activities: homework and a movie, a party and television, and play with a friend or by oneself.

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Procedure

Subjects were run individually by either a male or female experimenter, each of whom ran an equal number from each sex and grade. Children were told that their help was needed in determining how much reward other girls (boys) should be given as a result of doing some work for a student teacher. They were asked if they were willing to help in the allocation, and in no instance did a child decline.

Children were told that their task was to divide a reward between two children after hearing how hard each had tried and how much work was completed. In each instance, the targets were described as the same age and sex as the subject. They were told that in some instances (Effort-only and Work-only) some information had been misplaced or lost, but they were to still divide the reward according to what they thought was fair.

Before the actual trials, subjects were familiarized with the drawings and sentence descriptions. The experimenter pointed in turn to each of the Work drawings and gave the appropriate verbal description. Subjects were then asked to point to the correct drawing after hearing its verbal description a second time. If an incorrect identification was made, the process was repeated for the three drawings. The same familiarization procedure was used for the three Effort drawings. Finally, all six drawings were shown on a page in random placement, and children had to point to a drawing when given its verbal description. No child required more than two presentations in order to correctly select all six drawings.

After familiarization, two practice trials were given to introduce the response apparatus. This was a wooden box, 62 cm by 9.5 cm by 9.5 cm, with a window portion measuring 20 cm by 4 cm, and calibrated in centimeters from 0 to 20. The calibration was visible to the experimenter, but not to subjects. Subjects manipulated levers which filled the window with two different slats,

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one red and one blue. The amount of a particular colored slat represented the portion of the reward (absolute amounts were not specified) to be given to each child in the pair. Subjects were told that the slats must meet so that all the reward could be dispensed. One side of the window was designated as Child "A", and the other, Child "B". Subjects were told that "A" and "B" were given for names since the subject might know the actual children involved in the work. The number corresponding to the point at which the slats met served as the dependant measure, i.e., the amount of reward given the experimental child compared to the standard foil.

After it was assured that the subject understood the task and apparatus, the 16 experimental trials were run, along with the interspersed tasks.

RESULTS

Preliminary analysis revealed no effects for subject or experimenter sex, so subsequent analyses collapsed over these variables.

Effort and Work accomplished

More reward was given to children described as putting forth more effort (High > Medium > Low), and completing more work (High > Medium > Low) (F's (2,180) = 84.91 and 195.94, respectively, p.'s < .001). Subjects discriminated between levels of deservingness factors.

Important for notions of developmental progression, first graders gave less reward than did either fourth or seventh graders when low work was accomplished, but gave more reward with high accomplishment (Grade by Work interaction F (4,180) = 11.78, p. > .001). Thus, first graders were more affected by work output than were the older children, as shown in the cross-over in Figure 1.

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Insert Figure 1 here

Although the interaction between Grade and Effort did not reach an acceptable level of statistical significance ($F(4,180) = 1.99$, $p < .10$), the direction was consonant with the prediction of greater effect of effort for older children. Figure 2 suggests that fourth and seventh graders gave less reward under the low effort condition than did first graders and more reward under the high effort condition, but a Newman Keuls analysis indicated that these differences were nonsignificant. However, some marginal consolation for the predicted difference between grades comes from additional analyses which yielded significant differences between high and low effort conditions for both fourth ($q(3,180) = 4.70$, $p < .01$) and seventh ($q(3,180) = 4.98$, $p < .01$) graders, but not for first graders. For first, fourth, and seventh graders, the differences between low and medium effort were significant at the .05 level (q's $(2,180) = 2.88$, 2.87, and 3.15, respectively).

Insert Fig. 2 here

No other effect reached statistical significance, although the interaction of Effort, Work, and Grade approached an acceptable level ($F(8,360) = 1.96$, $p > .06$). This is mentioned because of its potential theoretical interest. When analyses were separately conducted for each grade, the Effort by Work interaction was significant for seventh graders ($F(4,120) = 4.02$, $p > .005$) but not for first and fourth graders (F's $(4,120) = 1.65$ and .54, respectively). Lack of an interaction between informational components suggests <u>constant weighting</u>, whereby the weight of each component is unchanged by the value of the other component being integrated. Put another way, the weight of either effort or work accomplished is <u>absolute</u>. An

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but vary with the value of the paired component. For seventh graders, rewards converged under the high work condition, so that Effort had less effect here than when paired with the other levels of Work. Newman Keuls analyses revealed, for seventh graders, significant differences between high and medium, and medium and low Effort under all conditions of Work except for the medium/high Effort comparison when Work was high (q (2,120) = .52). Although the data are weak, they do suggest the possibility that seventh graders are using information relativistically, that is, they are attaching importance to effort relative to the context of the work accomplished. This would be consistent with Piaget's (1965) distinction between Heteronomous and Autonomous morality stages, based in part on the distinction between assigning unchanging levels of importance to moral inputs versus weighing inputs by contextual and situational factors.

Equality and Equity: Quantitative Analysis

Data were fit to a general weighted averaging model by the use of a non-linear estimation technique (Draper & Smith, 1966). The model takes the form:

$$\text{Reward} = w_0 s_0 + w_w s_w + w_e s_e \;/\; w_0 + w_w + w_e,$$

where s_w is the reward value of a given work output, s_e is the value of a given effort description, s_0 is the value of the initial impression, and the w's represent the respective weights. A separate analysis was run for each of the grades and the model proved to be statistically significant for first, fourth, and seventh graders (F's (2,286) = 803.9, 1948.7, and 2336.5, respectively). Estimates of scale values for the different levels of Effort and work were obtained from an independant sample of 20 first, 30 fourth, and 18 seventh graders responding to each stimulus singly. In the model, s_0 was set at 10, the scale midpoint, under the assumption that the reward given to participants with unknown effort and work output would be equal, and model

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weights were the predicted variables. Obtained weights were transformed to sum to 1, and are presented in Table 1.

Insert Table 1 here

There was a decrease in the weight associated with Work from the first to fourth, but not from the fourth to seventh grades. This accords with the Work by Grade interaction noted in the qualitative data. There was also an increase in the weight given to effort from first to fourth, but as with Work, the weight did not differ from fourth to seventh grades.

Most noteworthy, there is a greater reliance by fourth and seventh graders upon the initial impression than by first graders. That is, fourth and seventh graders give as much credence to their own initial impression as they do to each of the deservingness components, while first graders give very little weight to initial impression. Recall that the initial impression value was set at the scale midpoint, or an equal distribution of rewards; consequently, it appears that first graders give less heed to an equality initialization, relative to deservingness, than do fourth and seventh graders.

DISCUSSION

The integration analysis allowed for simultaneous assessment of equality and deservingness usage and of patterns of emphasis placed on different types of deservingness information. Regarding the first issue, first grader allocations were based almost entirely on deservingness components. Their combined weights for Effort and Work were .91, compared to .65 and .67 for fourth and seventh graders, respectively. This is counter to moral cognition expectations, but may not necessarily refute prevailing notions about the direction of the progression. Overlaying the expected cognitive progression

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may be a social factor: Older children may be more concerned with group cohesion and harmony (Streater & Chertkoff, 1976) and be more peer oriented (Lasseigne, 1975), implicating a trend toward greater social pressure to share rewards equally. This may be an instance of conflicting social and moral developmental progressions (Turiel, 1980). It would be instructive to see whether the older children would be less equality oriented than in the present study if the participants were not depicted as their peers.

It appeared justified to equate effort and work accomplished in the reward allocation task with, respectively, intentions and consequences in morality judgment. Data suggests that moral cognition in these two tasks passes from objective to subjective responsibility, that is, from attention to external features of actions to internal features of actors. Besides strenthening the doctrine of structural parallelism between different manifestations of moral reasoning, the different trends observed in effort and accomplishment usage showed that deservingness is not a unitary component of the allocation decision. Deservingness can be decompcsed into intentional and outcome components, which show different developmental progressions. In a similar vein, Anderson & Butzin (1978) segmented deservingness into need and deed, but found no age differences for the latter, unlike the present study. This may be because their verbal information described effort, while visual stimuli depicted work output, thereby producing offsetting age trends.

As a final note, all children included equity considerations in their decisions to some extent, and all used effort and work output to some degree. Along with recent observations (e.g., Keasey, 1978), this refutes the thesis of centration, and indicates that children at different stages can and do use a variety of inputs, though to varying degrees. Discovery of these degrees is facilitated by an analysis of integration of deservingness components and an initial impression of equality.

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TABLE 1

Estimated Functional Values of

w_i, w_j, and w_o

	Grade Level		
Weight	First	Fourth	Seventh
w_e	.22	.30	.32
w_w	.69	.35	.35
w_o	.09	.35	.33

w_e = weight of effort
w_w = weight of work output
w_o = weight of initial impression

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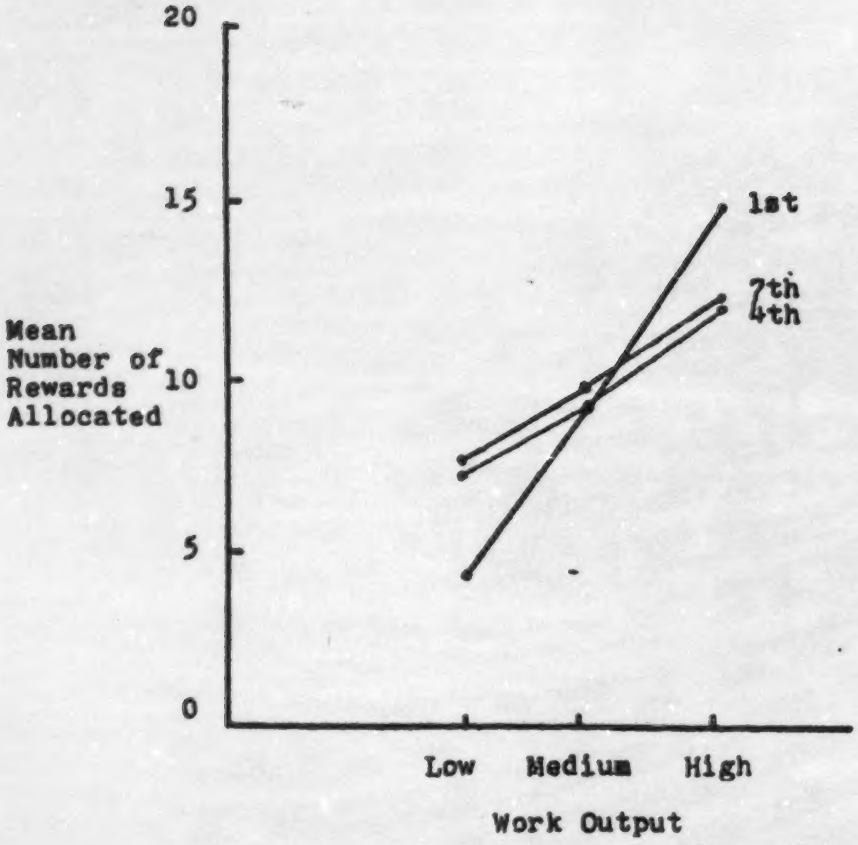

Figure 1. Mean number of rewards allocated by first, fourth, and seventh graders as a function of work output.

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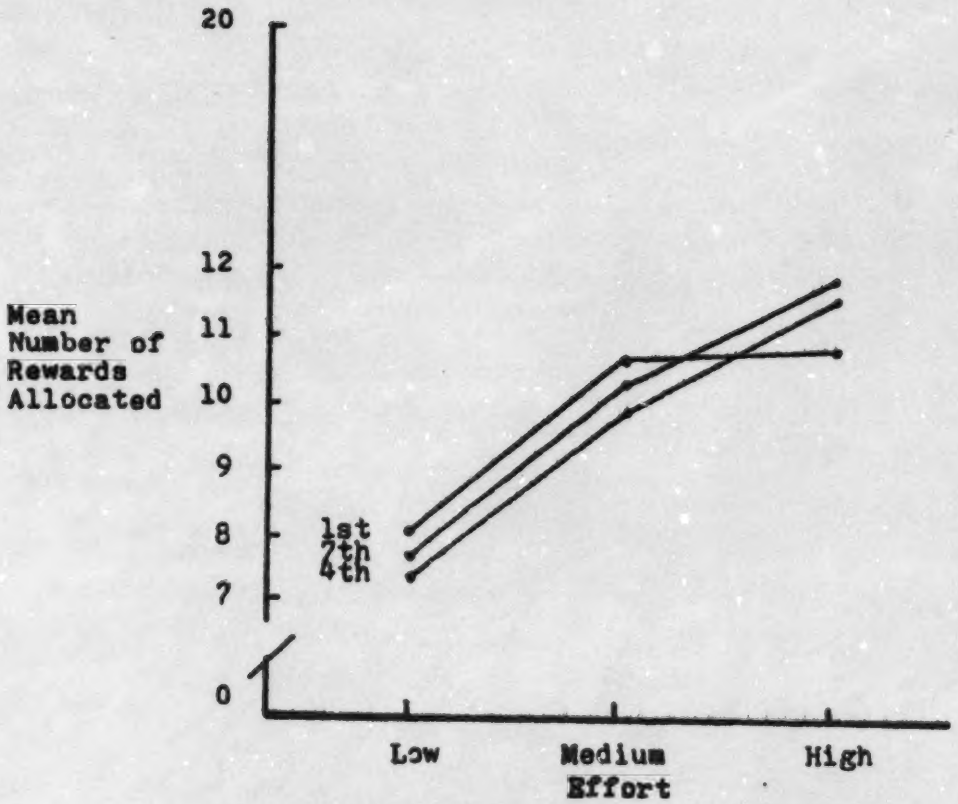

Figure 2. Mean number of rewards allocated by first, fourth, and seventh graders as a function of effort.

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